

Developing Answerable Clinical Questions & Searching the Medical Literature

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Overview

- Importance of the right Clinical Question
- Framing the Clinical Question
 - PICO Format
 - Use of an IT platform
- Inclusion/Exclusion criteria
- Literature search
- Article review
 - Use of an IT platform
- Benefits

The importance of asking the right question

- “If I were given one hour to save the planet, I would spend 59 minutes defining the problem and one minute resolving it.”

Albert Einstein

- To ensure your initiative is aligned with your strategy you need to be rigorous in defining the problem you are trying to solve and why those issues are important.

“ASK” – Focus Question

- Critical Step, Why?
 - Development of a clearly defined question is what creates the backdrop and ultimately sets the pace for the EBM process
 - Developing an answerable clinical question is what forms the framework of which the evidence will be acquired
- What occurs without optimal energy and time?
 - No longer effective or efficient (waste resources)
 - Produce wrong or irrelevant outcomes
 - Develop recommendations that are not aligned with initiative’s strategies

Framing The Clinical Question

- Converting the information needs into a clinical question
 - Involves collaboration from all interested in the question and answer(s)
 - Iterative process
 - Ultimately, a well defined and structured question facilitates efficient searching in the literature search and the likelihood of finding meaningful results

PICO Format (Explicit, Focused Clinical Question)

PICO	Definition/Description
P	Patient, Population or Problem
I	Intervention, Prognostic Factor or Exposure
C	Comparison or Intervention (If appropriate)
O	Outcome (Critical & Important)
What type of question are you asking?	Diagnosis, Etiology, Therapy, Prognosis, Prevention, Harm
Type of study you want to find?	What would be the best study design/methodology

Example: General Clinical Question

What medications should be given to patients with heart failure?

■ Vague and general clinical question

- Difficult to construct PICO elements and conduct literature search from this question
- Need a more defined and focused question
- Factors to consider to make this a specific clinical question
 - What is the population of interest? (e.g. adults, certain age groups, does the population of interest have additional comorbidities)
 - What are the interventions of interest?
 - Are we comparing these interventions with other treatment modalities?
 - What outcomes are important to consider and/or look for in the literature?

Example: Explicit, Specific Clinical Question

Clinical Question: Should beta-blockers be used, in addition to standard treatment, for patients with LVSD?

P	Adults with LVSD on standard therapy for heart failure and without contraindications to beta-blockers
I	Beta-blocker therapy
C	Placebo
O	Mortality due to cardiac causes; All-cause mortality; Hospitalization
What type of question are you asking?	Treatment
Type of study you want to find?	Meta-analyses, Randomized Controlled Trials

Using an IT platform to define PICO

Portal and Database Protocol

1. What is/are the framed questions you would like to answer?

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Note: As an adjunct to search and to help identify relevant articles, please provide Doctor Evidence with a list of references of clinical studies that should be reviewed during the database creation process.

Sample Framed Question

“What is the evidence regarding a sirolimus eluting stent compared with paclitaxel eluting stents or with bare metal stents in people with acute ST elevation myocardial infarction?”

2. What is the PICO, where P = patient population, I = intervention, C = comparison group, O = outcomes? *Note whether outcomes are “and/or”.*

P =	
I =	
C =	
O =	

Using an IT platform to define PICO

Turning data into knowledge

3. **Should studies that have mixed populations of the characteristics chosen be included (i.e.: 80% diabetic, 20% not diabetic)? Or, should only studies with pure population characteristics (i.e., 100% diabetic)?** Please note that full text will likely be required to definitively answer this question.

- Yes, include mixed populations
 No, do not include mixed populations

If yes, is there a specific cut-off for inclusion (i.e.: only include studies that have at least 80% obese patients).

- Yes— Minimum percent for inclusion:
 No

4. **Should all study designs be included or only specific study designs?**

- All study designs
 Specific study designs (choose from below)

2 (or more) group studies (aka: comparison studies):

- RCT
 Prospective non-randomized controlled trial
 Retrospective non-randomized controlled trial

For comparison studies (per above), please select one or more categories below:

- Placebo
 Head to head – different drugs, devices or procedures
 Head to head – same drug, different dose
 Head to head – same drug, different dose schedule
 Head to head – same drug, different formulation
 Head to head – same drug, different route of administration
 Head to head – other (please specify _____)

Using an IT platform to define PICO

5. Is the length of study follow-up important?

Please note that full text will likely be required to definitively answer this question.

- Yes— Minimum follow-up time:
- No

6. Are there a minimum number of participants that should be included in each study?

Please note that full text will likely be required to definitively answer this question.

- Yes— Minimum number of participants:
- No

7. Are there any limits on nationality or language of studies?

Please note that pilot projects will include English studies only.

- English only, American only
- English only, any country
- Any language, any country

8. Identify date ranges for search, i.e., how far back should Doctor Evidence search for relevant articles? For example, no date limit or limit to articles published in the last ten years.

- No date limit
- Yes— Limit to articles published within last number of years (specify):

Using an IT platform to define inclusion/exclusion criteria

- First specify criteria in standardized PICO form
 - Study design, length of follow-up, language
- Remaining inclusion/exclusion not in standardized PICO form
 - Assessed during article review



Clinical Question:	In patients with unrepaired abdominal aortic aneurysm (AAA) what is the effectiveness of pharmacologic therapy, including angiotensin-converting enzyme (ACE) inhibitors, beta-blockers and statins, to reduce the risk of cardiovascular disease progression? What are the harms associated with treatment?
Population:	Inclusion: Unrepaired AAA >3 cm. Exclusion criteria (including but not limited to): <ol style="list-style-type: none">1. History of AAA repair2. Other indications for these drugs including but not limited<ul style="list-style-type: none">• Established CAD (MI; Prior bypass/angioplasty; angina; any known ischemic CAD, e.g. positive treadmill test) (statins, beta-blockers, ACEI)• History of stroke/TIA (statins, ACEI)• Non-coronary atherosclerosis (statins, ACEI, beta-blockers)• Hypertension (ACEI, beta-blockers),• Dyslipidemia warranting treatment (statins)• Heart Failure (ACEI, beta-blockers)• Other conditions where statins, beta-blockers, or ACEI may be indicated

Conduct Literature Search

- Translate clinical question into defined search strategy
- Use terms related to the health condition of interest (population), terms related to the intervention(s), and terms specifying the type(s) of study design
 - Use of both brand and “generic” names
- Use of Boolean operators
- All searches conducted using Medline (PubMed), CENTRAL (Cochrane Central Register of Controlled Trials), and the Cochrane Library of Systematic Reviews
 - Other databases/search engines used as needed
- Articles identified are loaded into IT platform

Example Search

Search Name	Search String	Number of hits
	Limits: 6/1/2009 to Present, English, Humans, Abstracts, Meta - Analysis, RCT, Systematic Review	
Disease search	(acute coronary syndrome [tw]) OR (angina pectoris [tw]) OR (angina, stable [tw]) OR (angina, unstable [tw]) OR (angina pectoris, variant [tw]) OR (microvascular angina [tw]) OR (coronary disease [tw]) OR (coronary artery disease [tw]) OR (coronary occlusion [tw]) OR (coronary stenosis [tw]) OR (coronary restenosis [tw]) OR (coronary-Subclavian Steal Syndrome [tw]) OR (coronary thrombosis [tw]) OR (myocardial infarction [tw]) OR (Anterior Wall Myocardial Infarction [tw]) OR (interior Wall Myocardial Infarction [tw]) OR (myocardial stunning [tw]) OR (shock, cardiogenic [tw]) OR (myocardial ischemia [tw]) OR myocardial ischemia OR myocardial ischemia [mesh]	3930
Anticoagulant search (including specific drug names)	Anticoagulants OR warfarin OR coumadin [tw] OR dabigatran OR pradaxa OR rivaroxaban OR xarelto [tw] OR apixaban OR eliquis	1300
Antiplatelet Search (including specific drug names)	Platelet Aggregation Inhibitors OR Aspirin OR Clopidogrel OR plavix [tw] OR Prasugrel OR effient [tw] OR Ticagrelor OR Brilinta [tw] OR Ticlopidine OR ticlid [tw] OR Cilostazol OR pletal [tw] OR Dipyridamole OR persantine [tw] OR Elinogrel	1578
Stent Search	Stent	1163
Combination Searches	#2 AND #3	274
Combination Searches	#2 AND #4	645
Combination Searches	#2 AND #5	691
Combination Searches	#2 AND (#3 AND #4)	166
Combination Searches	(#2 AND #5) AND (#3 AND #4)	42
Combination Searches	(#2 AND #5) AND (#3 OR #4)	954
Deduplicated References	Total Number of Hits	1384

Study Rating Interface

Welcome to Kaiser Quality and Care Delivery Excellence

Favourites Kaiser - ICVH: Perioperative beta blockers - client package

Quick Search Search for Keyword in Title AND Abstract Go Tip Advanced Search

Welcome to Doctor Evidence
Studies Conducted on Kaiser - ICVH: Perioperative beta blockers - client package :: 49 Assigned Studies Available for Review
New studies for KP to review

26 Total Studies				22 RCT Placebo(s)	2 RCT Head to Head(s)	2 Unclassified				
Acronym	Authors	Reference Title	Journal	Publication Type	Publication Date	Study Design	Your Rating	Full Text	Abstract	Favourites
1	Suttne			RCT Placebo		RCT Placebo	Not Relevant	Full Text	Abstract	
2	Menig			RCT Placebo		RCT Placebo	Not Relevant	Full Text	Abstract	
3	Lim S			RCT Placebo		RCT Placebo	Not Relevant	Full Text	Abstract	
4	Raby			RCT Placebo		RCT Placebo	Maybe Relevant	Full Text	Abstract	
5	McSPI	Walla		RCT Placebo		RCT Placebo	Relevant	Full Text	Abstract	
6	Van Den Berg A.A,	Use of esmolol to attenuate h	Middle East journal (Clinical Trial		1998 Feb	Unclassified	Not Relevant	Full Text	Abstract	
7	Liguori G A, Kahn R	The use of metoprolol and gly	Anesthesia and ane Clinical Trial							
8	Jakobsen C J, Bille	Preoperative metoprolol imprc	Acta anaesthesiolo Clinical Trial							
9	Sharma S, Mitra S,	Esmolol blunts the haemodyn-	Canadian journal of Clinical Trial							
10	Korpinen R, Saarniv	QT interval of the ECG, heart	Acta anaesthesiolo Clinical Trial							
11	Davies M J, Dysart I	Prevention of tachycardia wit	Anaesthesia and inf Clinical Trial							
12	N/A	Jakobsen C J, Blom	Effect of pre-operative metop	European journal of Clinical Trial						
13	Miller D R, Martineau	Bolus administration of esmol	Canadian journal of Clinical Trial							
14			adian journal of Clinical Trial							
15			nal of Cardiothc Clinical Trial							
16			nal of clinical ar Clinical Trial							
17	Leslie J B, Kalayjian	Attenuation of the hemodyna	Journal of clinical ar Clinical Trial							

Access to Full Text and Abstract

Independently Rate as Relevant, Maybe Relevant, or Not Relevant
Administrator Capabilities to Collate and Adjudicate Responses

Maybe Relevant
Relevant
Not Relevant

Full Text
Abstract

Export to Reference Manager® or Excel®

Reference Detail Linked Studies Notes

Date Added	Added By	Note
05/13/2011	Chan	Wrong Intervention = combined IV esmolol (beta-blocker) and PDE III inhibitor

Document Reasons for Rating

Add Note:

Add Note

Page 1 of 2 Export to Reference Manager (RIS) Export to Excel

EVIDENCE PACKAGES

Study Selection/Rejection Interface After Adjudicating Ratings

Quick Search Search for Keyword in Title AND Abstract Search Entire Package Search Framed Question Tip Advanced Search

Welcome to Doctor Evidence

Studies Conducted on Kaiser CAD Guideline - 1. Depression in CAD

All references for Depression in CAD

All Studies 30 RCT Placebo 10 RCT Head To Head 4 Prospective Cohort 1 Randomized Cross Over 1 Sub-Group Analysis 1 Cohort (type unknown)

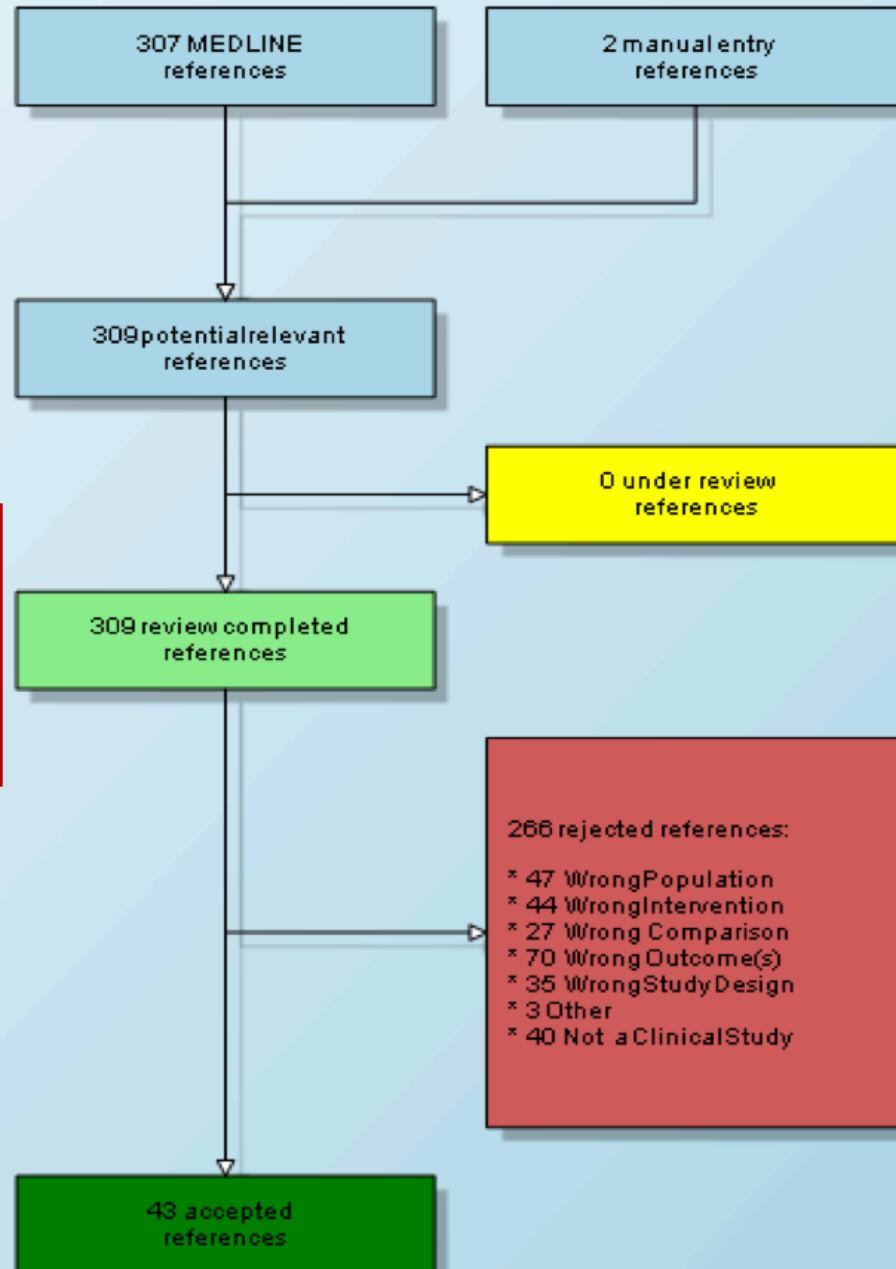
	Authors	Reference Title	Journal	Publication Type	Publication Date	Full Text	Abstract	Date Added	Favourites	Sharing	Study Design	Status
1	Cromheecke S, ...	Moderate acute isovolemic hemodilutio...	Anesthesia and ...	Clinical Trial	2008 Oct	Full Text	Abstract	2012 Apr 17	★		RCT Head to Head	Wrong Population
2	van Zyl LT, Lesp...	Platelet and endothelial activity in com...	Journal of throm...	Clinical Trial	2009 Jan		Abstract	2012 Apr 17	★		RCT Placebo	Accepted
3	Yu JB, Gong LR...	Effect of sevoflurane combination with e...	Saudi medical j...	Clinical Trial	2011 Oct		Abstract	2012 Apr 17	★		RCT Head to Head	On-Hold
4	Wernicke JF, Pr...	Safety and tolerability of duloxetine trea...	Journal of diabe...	Clinical Trial	2009 Sep-Oct		Abstract	2012 Apr 17	★		RCT Placebo	Under Review
5	Noman A, Ang ...	Effect of high-dose allopurinol on exerci...	Lancet	Clinical Trial	2010 Jun 19	Full Text	Abstract	2012 Apr 17				Reject
6	Habra ME, Bake...	First episode of major depressive disor...	Journal of psych...	Clinical Trial	2010 Aug		Abstract	2012 Apr 17				Wrong Outcome(s)
7	Pedersen SS, S...	Course of anxiety symptoms over an 18...	Psychosomatic ...	Clinical Trial	2008 Apr	Full Text	Abstract	2012 Apr 17				Wrong Population
8	Albus C, Beutel ...	A stepwise psychotherapy intervention f...	Journal of psych...	Clinical Trial	2011 Oct		Abstract	2012 Apr 17				Wrong Study Design
9	Baumeister H, H...	Psychological and pharmacological int...	Cochrane datab...	Review	2011		Abstract	2012 Apr 17				Wrong Population
10	Karlsson MR, E...	Effects of expanded cardiac rehabilitati...	Journal of beha...	Clinical Trial	2007 Jun		Abstract	2012 Apr 17				Wrong Outcome(s)
11	Gary RA, Dunba...	Combined exercise and cognitive beha...	Journal of psych...	Clinical Trial	2010 Aug		Abstract					Wrong Outcome(s)
12	Xian H, Scherre...	Genetic vulnerability and phenotypic ex...	Psychosomatic ...	Clinical Trial	2010 May	Full Text	Abstract					Wrong Comparison
13	Freedland KE, S...	Treatment of depression after coronary ...	Archives of gen...	Clinical Trial	2009 Apr	Full Text	Abstract					Wrong Intervention
14	Wong ML, Dong...	Elevated stress-hemoconcentration in ...	PloS one	Clinical Trial	2008	Full Text	Abstract					Wrong Outcome(s)
15	Trockel M, Burg ...	Smoking behavior postmyocardial infar...	Psychosomatic ...	Clinical Trial	2008 Oct	Full Text	Abstract					Wrong Study Design
16	Van der Kooy K...	Depression and the risk for cardiovascu...	International jou...	Review	2007 Jul		Abstract	2012 Apr 17				Wrong Outcome(s)
17	O'Neil A, Hawke...	A randomised, feasibility trial of a tele-h...	BMC cardiovasc...	Clinical Trial	2011	Full Text	Abstract					Wrong Outcome(s)
18	Pizzi C, Rutjes ...	Meta-analysis of selective serotonin reu...	The American jo...	Meta Analysis	2011 Apr 1	Full Text	Abstract	2012 Apr 17				Accepted
19	Tulner DM, Smit...	Antidepressive effect of mirtazapine in ...	Neuropsychobi...	Clinical Trial	2011		Abstract					Wrong Outcome(s)
20	Carney RM, Fre...	Effect of omega-3 fatty acids on heart ra...	Psychosomatic ...	Clinical Trial	2010 Oct	Full Text	Abstract					Wrong Comparison
21	Shemesh E, An...	A randomized controlled trial of the safe...	The Journal of c...	Clinical Trial	2011 Feb		Abstract					Wrong Population
22	Davidson KW, R...	Enhanced depression care for patients ...	Archives of inter...	Clinical Trial	2010 Apr 12	Full Text	Abstract					Wrong Outcome(s)
23	Oranta O, Luuto...	The outcomes of interpersonal counsell...	Nordic journal o...	Clinical Trial	2010 Apr		Abstract					Wrong Outcome(s)
24	Cowan MJ, Free...	Predictors of treatment response for de...	Psychotherapy ...	Clinical Trial	2008		Abstract					Wrong Outcome(s)
25	Honig A, Kuyper...	Treatment of post-myocardial infarction ...	Psychosomatic ...	Clinical Trial	2007 Sep-Oct	Full Text	Abstract					Wrong Outcome(s)
26	de Jonge P, Ho...	Nonresponse to treatment for depressio...	The American jo...	Clinical Trial	2007 Sep	Full Text	Abstract					Accepted

Document Reasons for Rejection

- Wrong Population
- Wrong Intervention
- Wrong Comparison
- Wrong Outcomes
- Wrong Study Design
- Not a Clinical Study
- Wrong Follow-up
- Wrong Number of Participants
- Not English
- Wrong Publication Date Cutoff
- Missing Characteristics
- Missing Outcomes
- Erroneous Data
- Duplicate Publication
- Wrong Outcome Stratification
- Abstract with Insufficient Information
- Study fits protocol, to be possibly added later

- Wrong Population
- Accepted
- On-Hold
- Under Review
- Reject

QUOROM Diagram



Automated Production of
QUOROM* Flow Diagram
Multiple Stages of
Inclusion/Exclusion

Overview of benefits of IT platform for literature review

- Increased efficiency
- Ability to track and document reasons for rejection, etc
 - Track those that still need to be reviewed
- Ability to have dual review
 - Discrepancies can be adjudicated using IT platform and marked as accepted or rejected
- More transparency in our decisions
 - Can include notes detailing why we rejected an article, important article information, etc
- New articles are identified and added using a dynamic process
- Articles can be monitored over time and housed in one database for each clinical question
- More rigorous and allows us to better answer clinical questions